What is claimed is:

1. A device adapted to be used in a communication system in which a first unit communicates with a second unit using a common frequency, the device comprising:

means for detecting an offset between the common frequency used by the first unit and the second unit in a first signal transmitted by the first unit and received by the second unit;

means for adjusting the common frequency in accordance with the offset in a second signal to be transmitted by the second unit and to be received by the first unit so that the effects of the offset to be perceived by the first unit will be substantially reduced.

2. A device according to claim 1, wherein the common frequency is a carrier frequency.

3. A device according to claim 1, wherein the common frequency is a sampling frequency.

4. A device according to claim 2, wherein the means for detecting the offset includes means for performing a correlation on a digital representation of the first signal so as to lock onto the offset in the carrier frequency.

5. A device according to claim 2, wherein the means for adjusting the common frequency includes a means for digitally shifting data in frequency to be transmitted in accordance with the carrier frequency and the offset.

6. A device according to claim 3, wherein the means for detecting the offset includes means for performing a variable delay on a digital representation of the first signal so as to lock onto the offset in the sampling frequency.

7. A device according to claim 3, wherein the means for adjusting the common frequency includes means for digitally interpolating data to be transmitted in accordance with the sampling frequency and the offset.

8. A device according to claim 2, wherein the means for detecting the offset includes means for locking onto the offset in the carrier frequency and for producing an output signal corresponding thereto.

9. A device according to claim 8, wherein the means for adjusting the common frequency includes means for variably adjusting a reference frequency output by a crystal oscillator in accordance with the output signal generated by the locking means.

10. A device according to claim 3, wherein the means for detecting the offset includes:

means for sampling the first signal;

means for generating an output frequency corresponding to the common sampling frequency having a desired phase and frequency in accordance with a control signal;

means for comparing the sampled first signal and the output frequency so as to lock onto the offset in the sampling frequency; and

means for adjusting the control signal in accordance with the offset.

11. A device according to claim 10, wherein the means for generating the output frequency includes means for selecting one of M phases of the common sampling frequency in accordance with the control signal.

12. A device according to claim 3, wherein the means for adjusting the common frequency includes means for generating an output frequency corresponding to the common sampling frequency having a desired phase and frequency.

13. A device according to claim 10, wherein the means for adjusting the common frequency includes means for generating a second output frequency corresponding to the common sampling frequency having a second desired phase

and frequency.

14. A device according to claim 13, wherein the means for generating the output frequency includes means for selecting one of M phases of the common sampling frequency in accordance with the control signal.

15. A method adapted to be used in a communication system in which a first unit communicates with a second unit using a common frequency, the method comprising:

detecting an offset between the common frequency used by the first unit and the second unit in a first signal transmitted by the first unit and received by the second unit;

adjusting the common frequency in accordance with the offset in a second signal to be transmitted by the second unit and to be received by the first unit so that the effects of the offset to be perceived by the first unit will be substantially reduced.

16. A method according to claim 15, wherein the common frequency is a carrier frequency.

17. A method according to claim 15, wherein the common frequency is a sampling frequency.

18. A method according to claim 16, wherein the step of detecting the offset includes performing a correlation on a digital representation of the first signal so as to lock onto the offset in the carrier frequency.

19. A method according to claim 16, wherein the step of adjusting the common frequency includes digitally shifting data in frequency to be transmitted in accordance with the carrier frequency and the offset.

20. A method according to claim 17, wherein the step of detecting the offset includes performing a variable delay on a digital representation of the first signal so as to lock onto the offset in the sampling frequency.

21. A method according to claim 17, wherein the step of adjusting the common frequency includes digitally interpolating data to be transmitted in accordance with the sampling frequency and the offset.

22. A method according to claim 16, wherein the step of detecting the offset includes locking onto the offset in the carrier frequency and producing an output signal corresponding thereto.

23. A method according to claim 22, wherein the step of adjusting the

common frequency includes variably adjusting a reference frequency output by a crystal oscillator in accordance with the output signal generated by the locking means.

24. A method according to claim 17, wherein the step of detecting the offset includes:

sampling the first signal;

generating an output frequency corresponding to the common sampling frequency having a desired phase and frequency in accordance with a control signal;

comparing the sampled first signal and the output frequency so as to lock onto the offset in the sampling frequency; and

adjusting the control signal in accordance with the offset.

25. A method according to claim 24, wherein the step of generating the output frequency includes selecting one of M phases of the common sampling frequency in accordance with the control signal.

26. A method according to claim 17, wherein the step of adjusting the common frequency includes generating an output frequency corresponding to the common sampling frequency having a desired phase and frequency.

27. A method according to claim 24, wherein the step of adjusting the common frequency includes generating a second output frequency corresponding to the common sampling frequency having a second desired phase and frequency.

28. A method according to claim 27, wherein the step of generating the output frequency includes selecting one of M phases of the common sampling frequency in accordance with the control signal.

29. A device adapted to be used in a first unit that can communicate with a second unit using a common carrier frequency, the device comprising:

a frequency lock loop that is coupled to receive a digital representation of a first signal transmitted by the second unit, the frequency lock loop being adapted to detect a carrier frequency offset in the first signal and to produce offset information corresponding thereto; and

a frequency shift block that is coupled to receive the offset information and data to be transmitted by the first unit in a second signal to be received by the second unit, the frequency shift block being adapted to digitally shift the data in frequency in accordance with the common carrier frequency and the carrier frequency offset so that the effects of the carrier frequency offset to be perceived by the second unit will be substantially reduced.

30. A device adapted to be used in a first unit that can communicate with a second unit using a common sampling frequency, the device comprising:

a delay lock loop that is coupled to receive digitally sampled data of a first signal transmitted by the second unit, and digitally detected data of the first signal, the delay lock loop being adapted to detect a sampling frequency offset in the first signal based on the received data and to produce offset information corresponding thereto; and

a digital low-pass filter that is coupled to receive the offset information and data to be transmitted by the first unit in a second signal to be received by the second unit, the digital low-pass filter being adapted to digitally interpolate the data to be transmitted in accordance with the common sampling frequency and the sampling frequency offset so that the effects of the sampling frequency offset to be perceived by the second unit will be substantially reduced.

31. A device adapted to be used in a first unit that can communicate with a second unit using a common carrier frequency, the device comprising:

a frequency lock loop that is coupled to receive a digital representation of a first signal transmitted by the second unit, the frequency lock loop being adapted to detect a carrier frequency offset in the first signal and to produce an analog offset signal corresponding thereto;

a crystal oscillator that supplies a reference frequency for modulating a second signal to be perceived by the second unit in accordance with

the common carrier frequency; and

a variably adjustable device coupled to receive the offset signal and to the crystal oscillator, the variably adjustable device being adapted to adjust the reference frequency of the crystal oscillator in accordance with the offset signal so that the effects of the carrier frequency offset in the second signal to be perceived by the second unit will be substantially reduced.

32. A device adapted to be used in a first unit that can communicate with a second unit using a common sampling frequency, the device comprising:

a voltage-controlled oscillator that generates an output signal having a frequency and phase in accordance with a control signal;

a phase detector that is coupled to receive a sampled signal of a first signal transmitted by the second unit, and the output signal from the voltage-controlled oscillator, the phase detector being adapted to detect a sampling frequency offset in the first signal based on a comparison of the received signals and to cause the control signal to be adjusted in response to the comparison so that the effects of the sampling frequency offset in the first signal to be perceived by the first unit will be substantially reduced;

a digital-to-analog converter that receives data to be transmitted in a second signal to be received by the second unit in accordance with the common sampling frequency; and

a second voltage-controlled oscillator that produces the common

sampling frequency in response to a second control signal that has been adjusted in accordance with the comparison performed by the phase detector so that the effects of the sampling frequency offset in the second signal to be perceived by the second unit will be substantially reduced.

33. A device adapted to be used in a first unit that can communicate with a second unit using a common sampling frequency, the device comprising:

a voltage-controlled oscillator that generates an output signal having a frequency and phase in accordance with a control signal; and

a phase detector that is coupled to receive a sampled signal of a first signal transmitted by the second unit, and the output signal from the voltage-controlled oscillator, the phase detector being adapted to detect a sampling frequency offset in the first signal based on a comparison of the received signals and to cause the control signal to be adjusted in response to the comparison so that the effects of the sampling frequency offset in the first signal to be perceived by the first unit will be substantially reduced;

wherein the voltage-controlled oscillator includes a phase interpolator that generates a selected one of M phases of the common sampling frequency, the selected one being determined by the control signal.

34. A device adapted to be used in a communication system in which a first unit communicates with a second unit using a common frequency, the

device comprising:

means for detecting an offset between the common frequency used by the first unit and the second unit in a first signal transmitted by the first unit and received by the second unit;

means for communicating information corresponding to the detected offset from the second unit to the first unit;

means for adjusting the common frequency in accordance with the offset in a second signal to be transmitted by the first unit and to be received by the second unit so that the effects of the offset to be perceived by the second unit will be substantially reduced.

35. A device adapted to be used in a communication system in which a first unit communicates with a second unit using a common frequency, the device comprising:

means for detecting an offset between the common frequency used by the first unit and the second unit in a first signal transmitted by the first unit and received by the second unit;

means for communicating information corresponding to the detected offset from the second unit to the first unit;

means for adjusting the common frequency in accordance with the offset in a second signal to be transmitted by the second unit and to be received by the first unit so that the effects of the offset to be perceived by the first unit

will be substantially reduced.